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Department of Energy

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OCT 07 1997

DOE-1427-97

Mr. Phillip C. Harris
Ohio Environmental Protection Agency
Division of Hazardous Waste Management
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Harris:

RESPONSE TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THORIUM MIXED WASTE TREATMENT AND STORAGE IN BUILDINGS 64 AND 65 - FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

Enclosed for your review and approval are responses to the Ohio Environmental Protection Agency (OEPA) Division of Hazardous Waste Management's (DHWM), August 6, 1997, comments on the above referenced project.

The Department of Energy, Fernald Environmental Management Project (DOE-FEMP) proposes that the treatment of thorium mixed wastes be incorporated under the FEMP Site Treatment Plan (STP) Ohio Mobile Chemical Treatment Preferred Option. This preferred option has been approved for inclusion of stabilization technologies. Thorium mixed waste populations requiring stabilization to meet the Nevada Test Site Waste Acceptance Criteria and applicable Land Disposal Restriction treatment standards will be identified in the 1997 FEMP STP Annual Update along with a detailed treatment schedule. A Technology Specific Work Plan describing the proposed treatment of thorium mixed wastes is planned for agency submittal in December, 1997.

Please contact Robert Danner of my staff at (513) 648-3167 if you wish to discuss any aspects of this project.

Sincerely,

for Jack R. Craig
Director

FEMP:Danner

Enclosure: As Stated

1

cc w/encl:

N. Hallein, EM-42-CLOV
R. Danner, DOE-FEMP
J. Saric, USEPA
P. Harris, OEPA
P. Pardi, OEPA
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S. Beckman, FDF/52-3
M. Frost, FDF/66
T. Hagen, FDF/65-2
L. Honigford, FDF/16-2
A. Neiling, FDF/16-2
T. Walsh, FDF/65-2
RCRA Operating Record/65-2
AR Coordinator/78

OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS
THORIUM MIXED WASTE TREATMENT AND STORAGE IN BUILDINGS 64 & 65
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
GENERAL COMMENTS

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 1
Comment: Provide a description of the waste characterization process used to evaluate thorium inventories as mixed waste, including process knowledge and analytical testing. Indicate if thorium mixed wastes will carry a listed or characteristic waste designation. Identify the hazardous waste constituents of thorium mixed waste.

Response: Remaining thorium waste inventories are being characterized using process knowledge and sampling and analysis results. Thorium wastes have been grouped in like populations based on process knowledge and representative statistical sampling has been performed on each group. Validation of characterization data for each population is currently in process and will be completed by September 15, 1997. The preliminary data shows six separate populations of thorium waste exceed TCLP limits for characteristic metals (based on process knowledge no listings or TC organic waste codes are applicable). A list of these populations and the characteristic metals for which they exceed TCLP is attached. Final waste characterization data for thorium mixed wastes will be included in the Technology Specific Work Plan for the Thorium Legacy Waste Stabilization Project that is planned to be submitted to Ohio EPA in December, 1997.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 2
Comment: Identify the anticipated date for completion of the waste characterization process.

Response: Sample collection was completed in June, 1997. Sample validation is currently in progress and is expected to be completed by September 15,1997. The Material Evaluation Forms (MEF) and waste profiles for all thorium waste populations are projected to be completed by December 31, 1997. These MEFs will constitute the formal waste declarations for thorium mixed waste populations. As MEFs are completed, individual waste populations will be managed in accordance with applicable site procedures and environmental regulations. Non-hazardous thorium wastes will continue to be managed as Low Level Waste while they are prepared for shipment and off-site disposal at the Nevada Test Site (NTS). Thorium populations which are declared mixed waste will be managed as hazardous waste at the Building 64/65 complex in accordance with applicable site procedures and the ARARs defined in our original submittal and this comment response.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 3
Comment: Identify the Site Treatment Plan treatment option for thorium mixed waste treatment and the schedule for treatment.

Response: Thorium mixed waste will be stabilized at the Fernald Site by a vendor to meet the Nevada Test Site (NTS) Waste Acceptance Criteria (WAC) and applicable Land Disposal Restriction (LDR) treatment standards under the Thorium Legacy Waste Stabilization Project. The Thorium Legacy Waste Stabilization Project will be managed as the projects have been under the FEMP Site Treatment Plan (STP). Since stabilization technologies are incorporated as part of and approved for use under the STP Ohio Mobile Chemical Treatment Preferred Option, the FEMP is proposing the stabilization of thorium mixed wastes be incorporated under this option. The 1997 FEMP STP Annual Update will identify the thorium mixed waste populations and treatment schedule that will be followed to treat thorium wastes under the Thorium Legacy Waste Stabilization Project. A draft treatment schedule is attached. A detailed treatment schedule will also be included in the Thorium Legacy Waste Stabilization Project Technology Specific Work Plan.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 4
Comment: Provide information in regard to the present condition of thorium mixed waste containers.

Response: Thorium containers were inspected during the sample collection process. Thorium waste containers are currently stored in one of two forms: (1) overpacked into 4'x4'x7' white metal boxes (WMBs) or (2) in drums. The WMBs and drums are in good condition and are currently stored in warehouses to prevent deterioration. Potentially hazardous thorium waste populations are containerized and overpacked in WMBs with the exception of three 5-gallon cans. The WMBs will serve as secondary containment for the thorium mixed waste while they are in storage at the Building 64/65 complex. The three 5-gallon cans will be placed into 55-gallon drums to provide secondary containment for these wastes.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 5
Comment: Describe physical state of thorium mixed waste and indicate if any free liquids are present.

Response: No free liquids are known to exist from process knowledge. No free liquids were encountered during the collection of 217 samples from 301 containers. The

thorium is in various chemical forms ranging from hydroxides to oxilates to metal. The majority of the thorium waste is in powder form with the remaining wastes comprised of scrap metal, pellets, rods, or thorium contaminated trash.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 6

Comment: Provide information relevant to mixed waste storage in Building 64/65 complex, to include a description of the building and location of storage area within the building complex, condition of floor surfaces, secondary containment provisions, and information on any potential incompatibility issues associated with storage at this location. Provide a floor plan of Building 64/65 complex indicating location of proposed interim storage.

Response: The Building 64/65 complex is a one-story block and steel building. The floor surfaces are in generally good condition with some minor cracks. The floor is a hardened concrete surface which has been utilized for thorium storage and container handling operations for the past several years. Building 65 is sealed and has an airlock as its only form of access. The Building is maintained under negative air pressure while the bank of eight 2000-cubic feet per minute High Efficiency Particulate Air (HEPA) filtration devices operate.

As stated in comment response #4, WMBs will be used to provide secondary containment for thorium mixed wastes. All of the hazardous waste will be stored in the southwest corner of building 65 until treatment. There are no potential incompatibility issues associated with this waste. All of the thorium waste is hazardous for TCLP metals only. Floor plans indicating proposed storage location inside building 65 are attached. Additional secondary containment devices will be provided once treatment of these wastes begins under the Thorium Legacy Waste Stabilization Project. Detailed information on secondary containment requirements associated with treatment will be provided in the Thorium Legacy Waste Stabilization Project Technology Specific Work Plan.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 7

Comment: Ohio EPA is aware of DOE-FEMP's stated ALARA considerations in conjunction with hazardous waste inspection requirements. Please elaborate on the proposal to conduct a weekly inspection of the outside of the Building 64/65 complex. Will this inspection reveal anything about the condition of the containers inside? Is any alternative method of inspection possible?

Response: Inspection of the outside of buildings 64 and 65 will reveal any breaches in the building outer containment structure. Although no indications of the inner container conditions will be revealed, the physical state of the waste makes spills

or releases unlikely. Since the thorium mixed waste containers are overpacked in WMBs and/or drums and consist primarily of dry powders with no known free liquids within the waste matrices, inspection of the outside of the buildings in this manner will be adequate for these wastes. Use of WMBs and/or drums as secondary containment will ensure no waste leaks onto the concrete floor and exits the building through cracks in the floor.

Alternative methods of inspection, such as weekly visual inspection of the outer containers within building 65, are possible. This method will increase the radiological exposure to the FEMP work force by approximately 150 mrem each week. Therefore, in keeping with DOE's ALARA principals, we are proposing to eliminate this dose by only inspecting the outside of buildings.

Commenting Organization: Ohio EPA Commentor: DHWM
Section #: NA Page #: NA Line #: NA
Original Comment #: 8

Comment: Describe the plans, or facility intentions, with regard to hazardous waste container labeling requirements.

Response: As MEFs are finalized and specific thorium populations are declared hazardous, each WMB that contains thorium mixed wastes will be labeled as "Hazardous Waste" in accordance with the requirements of OAC 3475-52-34 and existing site procedures. Labeling the outside of each WMB; rather than the specific containers within it, will allow easy identification of the material while eliminating additional radiological exposures to the site work force that would result from opening the WMBs to label each discrete container. As described in comment response #4, three 5-gallons cans will be placed in 55-gallon drums to provide secondary containment. The outside of these 55-gallon drums will also be labeled as described above.

THORIUM WASTE INFORMATION SUMMARY

Waste	Hazardous Constituents	Number of Containers	Size of Container (Gallons)
Thoria Gel (Thorium Hydroxide)	Barium (D005) Silver (D011)	458	55
Thoria Gel (Thorium Hydroxide)	Barium (D005) Silver (D011)	47	3
Vacuum Bag of Contaminated Soil, Rocks, Sand, Bricks, and Ceramics	TCLP Metals	1	5
Vials of Contaminated Soil, Rocks, Sand, Bricks, and Ceramics	TCLP Metals	2	5
Thorium Dioxide (Low Fluoride)	Lead (D008)	31	5
Thorium Dioxide (Low Fluoride)	Lead (D008)	4	10
Thorium Dioxide (Powder)	Lead (D008) Chromium (D007)	30	55
Thorium Dioxide (Powder)	Lead (D008) Chromium (D007)	6	30
Thorium Dioxide (Powder)	Lead (D008) Chromium (D007)	2	5
Thorium Dioxide (Powder)	Lead (D008) Chromium (D007)	3	3
Scrap Salts Including Floor Sweepings	Chromium (D007)	5	55

Draft Thorium Mixed Waste Stabilization Schedule

Schedule Activity	Dates	1997							1998													1999		
		June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Project Documentation	6/1-1/30																						
Submit Technology Specific Work Plan to OEPA	12/2							X															
Mobilize/ Begin Construction	1/1 - 4/15																						
Construction Acceptance Testing/System Operability Testin	4/16 - 7/15																						
Operations	8/1 - 12/30																						
Shipping	12/1 - 3/15																						
Project Complete	3/15																						X

Building 64/65 Proposed Layout